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January 30, 1997

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1919 M St. N.W.
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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In Re: Ex parte presentation from Primosphere Limited Partnership in
Docket 96-228

On January 28, 1997 DigiVox Corporation (DigiVox) filed a letter giving notice of a series of *ex parte* presentations to the Commission's staff with regard to the Notice of Proposed Rulemaking in Docket 96-228, Wireless Communications Service. Attached to this letter are two letters from Hughes Network Systems (HNS) providing technical statements in support of DigiVox. The following analysis by Richard Cooperman, engineer for Primosphere Limited Partnership, shows that the technical statements in these two letters are severely flawed and contain numerous glaring errors. Thus the Commission should ignore the recommendations of DigiVox.

The HNS letters contain material addressing three basic issues:

1. SDARS requirements for protection from WCS operations out-of-band emissions;
2. The establishment of 5 MHz buffer zones on either side of the SDARS band to protect SDARS; and
3. An estimate of WCS out-of-band emissions into the SDARS band.

Primosphere has carefully reviewed the statement and presents the following material in response.

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1. SDARS PROTECTION REQUIREMENTS

Primosphere has allowed a 5%, or approximately 0.2 dB, increase in its receiver noise for out-of-band emissions from a single transmitter operating in the WCS bands. This is a reasonable allocation since in one geographic area there will be multiple WCS service providers offering different services. Thus, SDARS must contend with out-of-band emissions from multiple service providers and will simultaneously see out-of-band emissions from several WCS transmitters. Since the interference from multiple WCS transmitters is additive the actual amount of out-of-band emission noise seen by one SDARS receiver will be significantly higher than 0.2 dB. Thus, an allocation of 0.2 dB for each interfering WCS transmitter is reasonable.

In addition, SDARS receivers will see out-of-band emission interference from sources other than WCS. In fact the DigiVox letter itself enumerates many of these sources of interference. In its link design Primosphere has allocated link margin to contend with interference from a broad array of sources including WCS transmitters. However, allowing a 2 dB increase in receiver noise floor from just a single WCS transmitter, as recommended by HNS, is unreasonable. At this level a small number of WCS transmitters would wipe out SDARS reception in a large area.

The out-of-band emission requirements proposed by Primosphere are reasonable, necessary to protect SDARS from interference and can be implemented in an economic manner. Improving transmitter out-of-band filtering coupled with spectrum shaping and cross polarization can be used to meet the out-of-band emission requirements proposed by Primosphere. WCS service providers should not be allowed to pollute the SDARS band, a band sandwiched between the WCS band segments.

2. GUARD BANDS

In its letter DigiVox proposes establishment of 5 MHz guard bands on either side of the SDARS band as protection for SDARS. DigiVox recommends that these two band segments be allocated to fixed voice or unpaired data services. DigiVox goes on to state that the 5 MHz buffer zone would protect SDARS from most out of band emissions that would result from using PACS in the two paired bands. DigiVox does not describe how this segmentation and restriction in the use of the WCS bands will protect SDARS from interference generated by WCS.

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DigiVox fails to recognize that the out-of-band emissions interference limits it recommends does not include a recommendation as to roll-off with frequency. Without such a recommendation guard bands are meaningless and provide no protection to other services.

3. WCS INTERFERENCE INTO THE SDARS BAND ESTIMATE

DigiVox attempts to justify its loose out-of-band emission limit recommendations on link calculations contained in Tables 1 and 2 of the January 28, 1997 HNS letter. These link calculations contain several falsely optimistic assumptions and seriously underestimate the level of out-of-band emissions into the DARS band.

For example, in the handset link HNS erroneously assumes:

9 dB of isolation based on a 12.5% duty cycle burst mode operation.

The fact that the handset transmits in bursts rather than continuously does not provide interference isolation. A 312 microsecond long burst every 2.5 milliseconds will break a communications link just as well as a continuous signal. Operating in burst mode provides no isolation or interference reduction. One cannot average the burst power over time, one must use the actual burst transmitter power. Thus, there is no isolation from burst mode operation.

5 dB of isolation for energy absorbed by human head.

A handset transmission is only partially shielded by the head of the operator. At best, the operator's head physically blocks the signal for about 60° of the 360° circumference around the handset antenna. Thus, there is no human head isolation for all but a small segment of viewing angle.

Further, the HNS calculation is based on its flawed assumption that a 2 dB increase in SDARS noise floor from a single handset is acceptable. The HNS calculations shown in Table 1 of their letter to DigiVox are in error and misrepresent WCS interference into the SDARS band by more 15 dB at a 12 foot distance.

Similarly, the fixed link contains a 20 dB isolation allocation for off axis gain of a fixed WCS base station antenna. This is stated by HNS for a 6 dB gain omnidirectional dipole antenna mounted 25 feet high and viewed by an SDARS receiver 24 feet away. It

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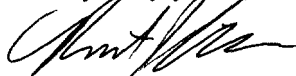
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is inconceivable that such a level of isolation could be provided given the broad beam characteristics of an omni-dipole antenna. A more realistic number would be on the order of 6 dB at best.

As with the handset, the HNS fixed site calculation is based on its flawed assumption that a 2 dB increase in SDARS noise floor from a single WCS transmitter is acceptable. The HNS calculations shown in Table 2 of their letter to DigiVox are in error and misrepresent WCS interference into the SDARS band by more 15 dB at a 24 foot distance.

In summary, the DigiVox letter and the HNS technical analysis on which it was based, under estimates the need for SDARS protection, recommends guard bands that limit WCS usage without protecting SDARS and is wrong in its analysis of WCS out-of-band emission interference into the SDARS band. Thus its recommendations are based on inaccurate engineering and should be rejected by the Commission.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Robert J. Ungar', written over a horizontal line.

Robert J. Ungar